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# **Soviet and US Defense Activities, 1971-80: A Dollar Cost Comparison**

**A Research Paper**

*SR 81-10005  
January 1981*

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*Information available as of 31 December 1980  
has been used in the preparation of this report.*

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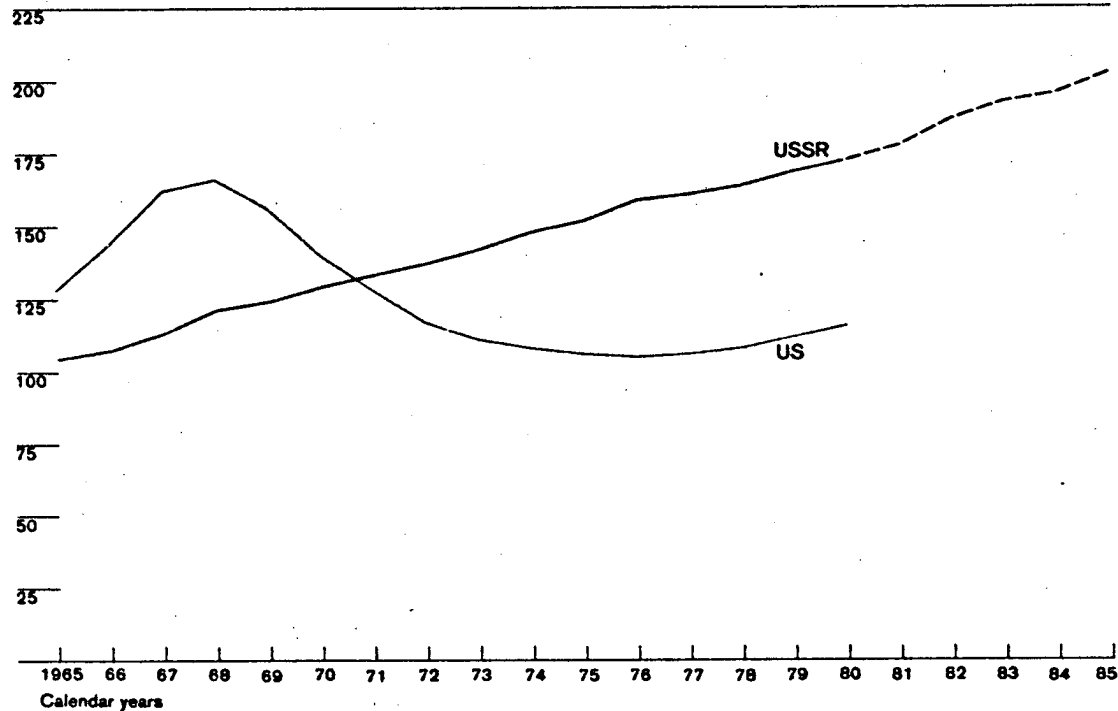
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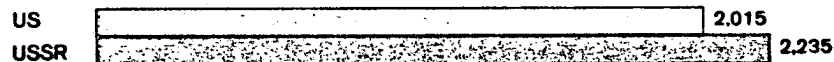
**Figure 1**  
**Total US and Soviet Defense Activities**

A comparison of US outlays with estimated dollar costs of Soviet activities if duplicated in the United States

Billion 1979 dollars



**Cumulative Costs, 1965-80**



The dollar cost estimates reflect the cost of producing and manning in the United States a military force of the same size and weapons inventory as the Soviet force and operating that force as the Soviets do. The costs shown include investment, operating, and RDT&E costs but exclude pensions. The US defense costs are in terms of outlays based primarily on the Department of Defense total obligational authority (TOA) in *The Five-Year Defense Program*, September 1980. US outlays for 1980 are estimated. The estimated dollar costs of projected Soviet defense activities for 1981-85 are subject to greater uncertainty than the estimates for the 1970s. For information on future US forces, see *Department of Defense Annual Report, Fiscal Year 1982*.

## Soviet and US Defense Activities, 1971-80: A Dollar Cost Comparison

### Introduction

This research paper compares Soviet and US defense activities in dollar cost terms. The estimated dollar costs of Soviet defense activities represent what it would cost annually, using prevailing US prices and wages, to acquire and operate a military force of the same size and with the same weapons inventory as that of the USSR.<sup>1</sup> The US dollar cost data are in terms of outlays derived from the *The Five-Year Defense Program* and the US budget for fiscal year 1981. The effects of inflation have been removed by expressing the defense activities of each country in constant 1979 dollars. The main focus of the paper is the 1971-80 period, but to give some additional perspective to the comparison, US and Soviet data for the 1965-70 period and a projection of estimated Soviet defense costs for 1981-85 have been added.

### Dollar Cost Comparisons

#### Aggregate Defense Costs

For the 1971-80 period, the estimated dollar costs of Soviet defense activities were 40 percent higher than comparable US outlays, but for the longer period, 1965-80, the estimated Soviet costs were only slightly higher than those of the United States. In 1980 they were approximately \$175 billion and estimated US outlays were \$115 billion—a difference of 50 percent.

The trends in the defense activities of the two countries were markedly different. The estimated dollar costs for the Soviet Union grew at an average annual rate of over 3 percent from 1965 through 1980. The overall pattern was one of continuous growth throughout the period, although growth rates fluctuated somewhat from year to year—a result of the phasing of major procurement programs for missiles, aircraft, and ships. US outlays rose from 1965 until 1968, reflecting the

costs of the Vietnam conflict, but then fell steadily until 1976. Since then they have grown at an annual average rate of 2.5 percent per year. The US growth rate over the entire time span, however, was negative.

Looking back at the trends before 1965, it is clear that the sustained growth in Soviet defense costs already had begun in the early 1960s. US defense outlays peaked in the early 1960s, when several major strategic systems were being procured. In 1965 US outlays were one-fourth more than estimated Soviet dollar costs, but by 1971 Soviet costs had surpassed US outlays.

The available evidence suggests that Soviet dollar costs will continue to grow for the next five years at approximately the same rate as they have in the past. This projection, although less certain than our estimate of current defense costs, is based on information about defense programs that are planned or under way.

#### Resource Comparisons

Soviet and US defense activities can be compared in terms of the major resource categories—investment, operating, and RDT&E (research, development, testing, and evaluation):

- The investment category covers the dollar cost of the procurement of equipment (including major spare parts) and the construction of facilities.<sup>2</sup> Investment costs represent the flow of equipment and facilities into the defense establishment; they are not an indication of the size of the force in any given year.
- The operating category covers the costs associated with operating, training, and maintaining current forces (including personnel costs). These costs are directly related to the size of the forces and to the level of their activity.

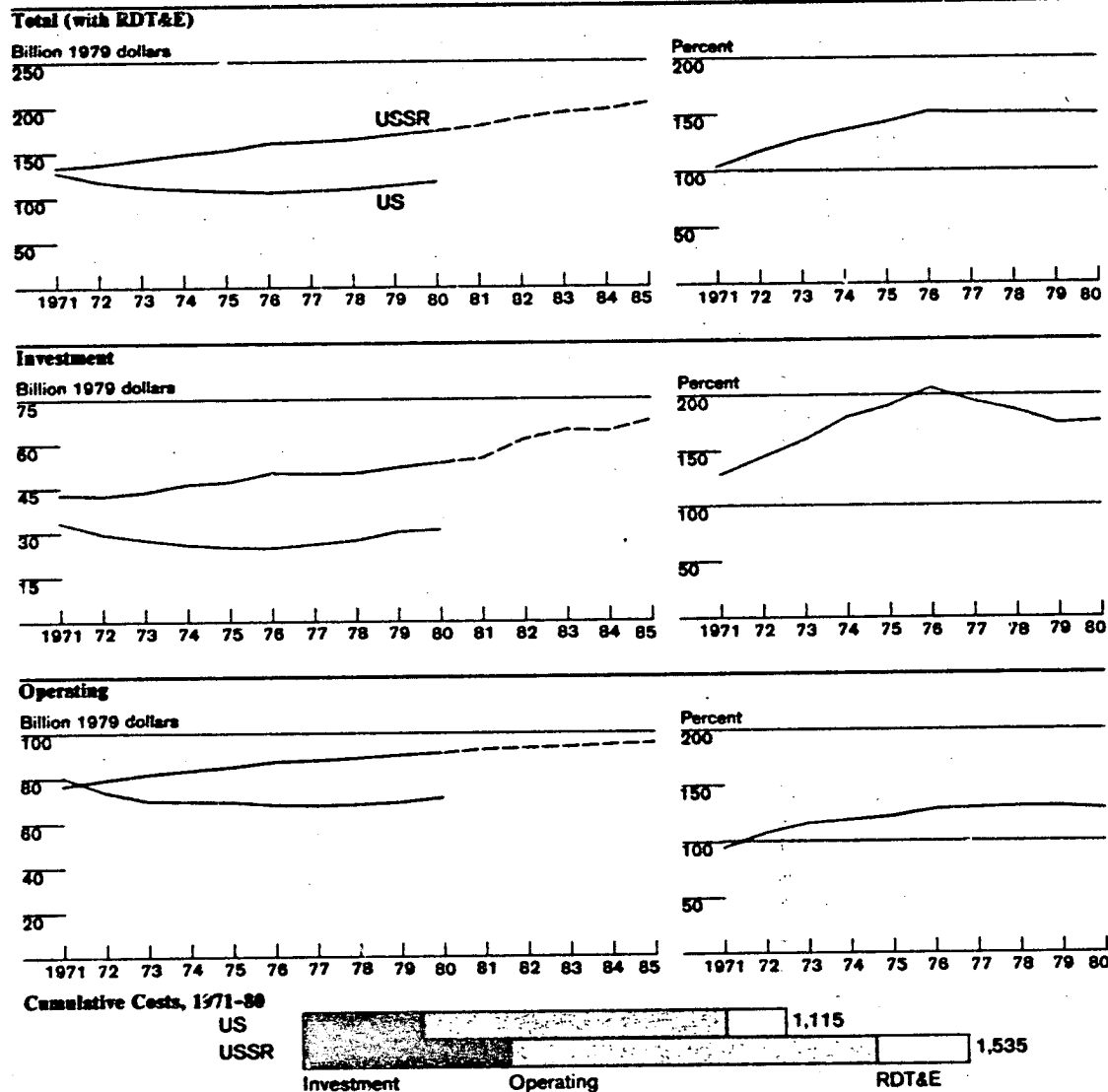
<sup>1</sup> For a complete statement of what the estimates include, how they are derived, and the confidence we have in them, see the methodology section that begins on page 10.

<sup>2</sup> Investment costs are sometimes defined—particularly by the Department of Defense—as including RDT&E.

**Figure 2**  
**US and Soviet Defense Activities**

Dollar cost of Soviet activities and  
US defense outlays

Dollar cost of Soviet activities as a percent  
of US defense outlays



Investment includes all costs for the procurement of military hardware and the construction of facilities. Operating includes all personnel-related costs (with the exception of pensions) and all costs associated with the operation

and maintenance of weapon systems and facilities. RDT&E includes the costs of exploring new technologies, developing advanced weapon systems, and improving existing systems.

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- The RDT&E category covers a variety of activities, including exploring new technologies, developing advanced weapon systems, and improving existing systems.

**Investment.** The estimated dollar cost of Soviet investment exceeded its US counterpart for every year of the 1971-80 period. The absolute difference grew from 1971 until 1976 as US investment decreased by an average of 6 percent per year. Soviet investment, measured in dollars, showed an upward trend but displayed cycles in annual growth rates that were related to the phasing of major procurement programs—especially those for missiles, aircraft, and ships. This growth is expected to continue at least into the mid-1980s.

By 1976 the estimated dollar costs for Soviet investment were twice their US counterpart. Since then, however, US investment has grown somewhat faster than estimated Soviet investment. For the past two years, the estimated dollar costs were about 75 percent more than US outlays. Coincidentally, they were also 75 percent more for the 1971-80 period.

**Operating Costs.** At the beginning of the period, estimated Soviet dollar operating costs were approximately equal to US outlays in this category. US outlays fell until 1977 and then grew slowly as increasing operation and maintenance (O&M) costs offset a decline in military personnel costs. Estimated Soviet operating costs grew over the entire period with both personnel and O&M costs sharing the increase. As a result of these trends, estimated Soviet operating costs were approximately 30 percent higher than US outlays for the last five years of the period. Over the entire period they were 20 percent higher.

**RDT&E.** We are less confident in our estimate for RDT&E than we are in our estimates for the other categories. Nevertheless, we are confident that the Soviet military RDT&E effort is large and that the resources devoted to it are growing. This assessment is reinforced by evidence on the increases in manpower and facilities devoted to Soviet military RDT&E programs. US RDT&E costs, on the other hand, fell until the middle 1970s and have grown at an average rate of 4 percent a year since then. Over the 1971-80 period, Soviet estimated dollar costs for RDT&E were half again as much as US outlays, and during the late 1970s they were about twice as much.

#### **Military Mission Comparisons**

Comparisons of Soviet and US defense activities also can be made by using US accounting definitions to array defense outlays by the missions they are designed to support. The missions in this section follow the guidelines in the *Defense Planning and Programming Categories* (DPPC) issued by the Department of Defense in November 1980. All comparisons exclude RDT&E costs.

**Strategic Forces.** This mission includes all forces assigned to intercontinental attack, strategic defense, and strategic control and surveillance, as well as nuclear weapons. It also includes the Soviet peripheral attack forces, for which there are no US counterparts. Measured in dollars, the level of Soviet activity for strategic forces was three times that of the United States over the 1971-80 period. If Soviet peripheral attack forces are excluded, the estimated dollar costs of the Soviet forces were two and two-thirds times the comparable US outlays for the period.

While US strategic costs fell slightly over the period, estimated Soviet costs grew, but at an uneven rate caused by the procurement cycles for the major strategic weapon systems. Our prediction of the dollar costs of Soviet strategic forces for the mid-1980s (see figure 3) depends heavily on the phasing of the deployment of the next generation of ICBMs and the new ballistic missile submarine. Should the deployment schedule differ from our projection, the increase in costs will differ proportionately.

Intercontinental attack forces accounted for about 35 percent of the estimated dollar cost of Soviet strategic forces for the period. US intercontinental attack forces received a larger share—about two-thirds—of the outlays for strategic forces.

Estimated dollar costs of Soviet intercontinental attack forces dipped in the early 1970s with the completion of third-generation ICBM deployment programs, then rose sharply in the mid-1970s with the deployment of fourth-generation systems. As this deployment was completed, the estimated dollar cost of intercontinental attack declined again. If in the mid-1980s the Soviets deploy ICBM systems now under development, estimated dollar costs will rise again.

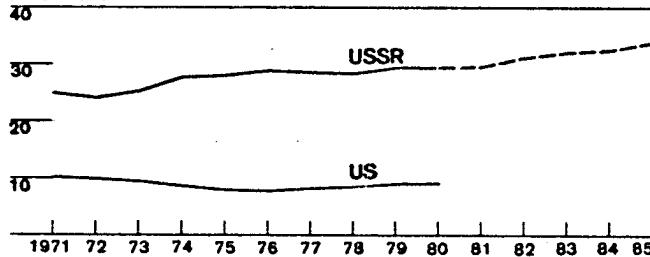
**Figure 3**  
**US and Soviet Major Missions**

Dollar cost of Soviet activities and  
US defense outlays

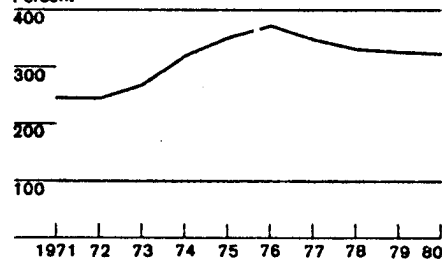
Dollar cost of Soviet activities as a percent  
of US defense outlays

**Strategic Forces**

Billion 1979 dollars

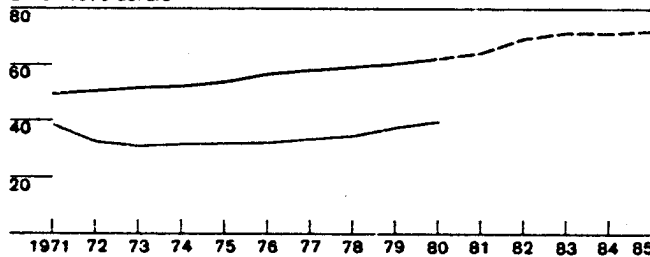


Percent

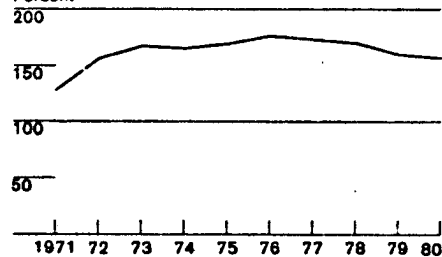


**General Purpose Forces**

Billion 1979 dollars

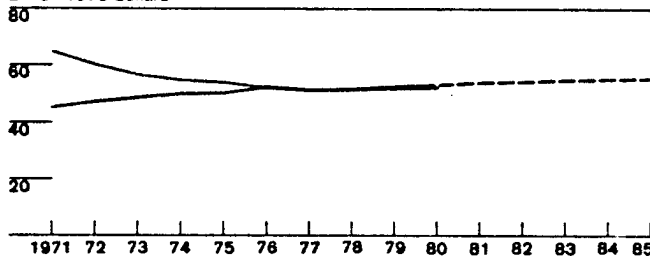


Percent

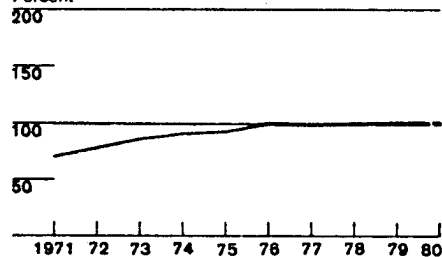


**Support Forces**

Billion 1979 dollars



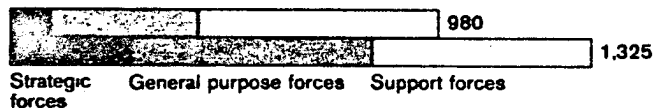
Percent



**Cumulative Costs, 1971-80**

US

USSR

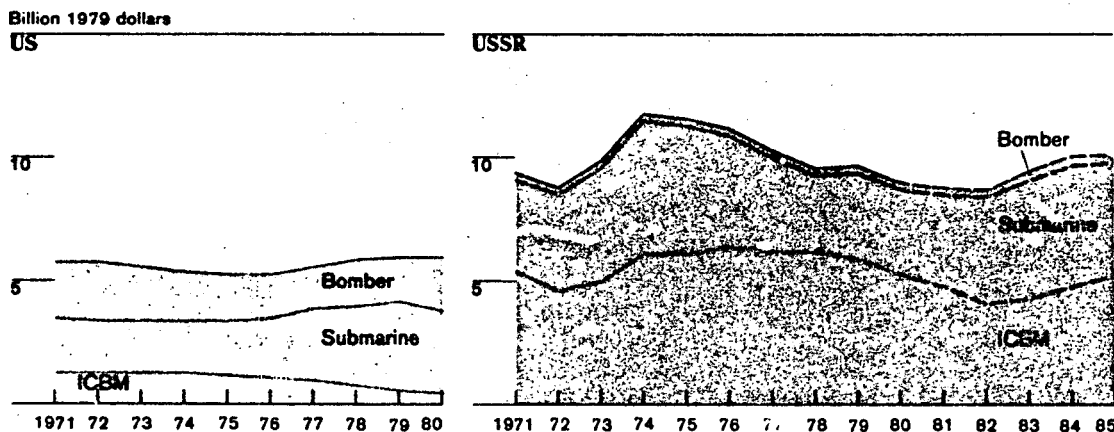


These comparisons use US Defense Planning and Programming Categories of November 1980 with minor adjustments made to attain comparability. Costs for pensions and RDT&E of both sides are excluded.

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**Figure 4**  
**US and Soviet Forces for Intercontinental Attack**  
 A comparison of US outlays with estimated dollar costs of Soviet activities if duplicated in the United States



The intercontinental attack mission is defined according to the US Defense Planning and Programming Categories of November 1980, with minor adjustments made to attain comparability. Costs for pensions, nuclear

materials for warheads, and RDT&E of both sides are excluded. The peripheral attack forces of the USSR are also excluded.

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Our cost estimates for intercontinental attack forces reflect a substantial difference in the mix of weapons in the Soviet and US forces. During the period, ICBM forces accounted for more than half of the estimated dollar cost of Soviet intercontinental attack forces but for only about one-fifth of comparable US outlays. On the other hand, bomber forces accounted for about one-third of the US costs in this category but for less than 5 percent of the Soviet total.<sup>1</sup>

Peripheral attack forces accounted for about 15 percent of the total dollar cost of the Soviet strategic mission. (Peripheral attack forces include medium- and intermediate-range ballistic missiles, medium bombers, and some older ballistic missile submarines. These forces are assigned strategic targets on the periphery of the Soviet Union.) The dollar costs for this mission have grown at a rapid rate, especially since the mid-1970s.

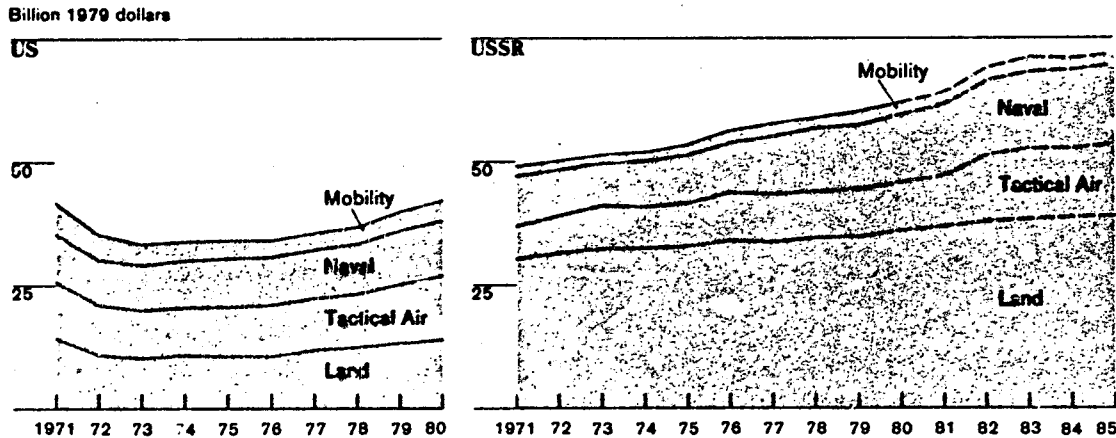
<sup>1</sup> Backfire aircraft assigned to Long Range Aviation are included in peripheral attack forces, and those assigned to the Navy are included in general purpose forces.

Estimated costs of Soviet forces for strategic defense, a major part of the Soviet strategic mission, comprised roughly 40 percent of the dollar costs of all strategic forces during the period. US strategic defense, on the other hand, accounted for less than 15 percent of US strategic mission outlays and declined continuously throughout the period. As a result, the dollar cost of Soviet strategic defense activities increased from five times US outlays in 1971 to almost 25 times US outlays at the end of the period. Soviet strategic defense activities will continue to grow in the early 1980s as the USSR introduces a new generation of interceptor aircraft and surface-to-air missiles.

**General Purpose Forces.** This mission includes all land, tactical air, naval, and mobility (airlift and sealift) forces. Estimated dollar costs of Soviet general purpose forces exceeded comparable US outlays by a large margin in every year of the period. In 1980 they were over half again as much; over the period, they were 60 percent larger.

**Figure 5**  
**US and Soviet General Purpose Forces**

A comparison of US outlays with estimated dollar costs of Soviet activities if duplicated in the United States



The general purpose mission is defined according to the US Defense Planning and Programming Categories of November 1980, with minor adjustments made to attain comparability. Costs for pensions, nuclear materials for warheads, and RDT&E of both sides are excluded.

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The estimated dollar costs of Soviet general purpose forces grew steadily over the period and are expected to continue to grow in the 1980s with some fluctuations caused by procurement cycles (especially those for tactical aircraft). US outlays for general purpose forces fell from 1971 to 1973 but then started to grow. By the end of the period, they had surpassed their 1971 level.

Within the Soviet general purpose forces, land forces accounted for 60 percent of the estimated dollar costs over the period. Land forces were also the largest US general purpose component, although they were not much larger than the tactical air and naval forces. While estimated Soviet costs for land forces grew over the whole period, US outlays followed the usual pattern—they fell until 1973 and then grew slowly for the rest of the period.

The dollar costs of the two countries' general purpose naval forces showed somewhat similar trends. (This category excludes US multipurpose aircraft carriers and their associated aircraft, which by DPPC definitions are included in tactical air forces.) The dollar costs for both countries' naval forces fell from 1971 until 1973, although the decline was more precipitous for the Soviet Union. Since then both have grown—the US costs at an average rate of 3 percent per year and the estimated Soviet dollar costs at over twice that rate. As a result, the estimated Soviet dollar costs, which were only slightly higher than US outlays over the period, were 25 percent more in 1980. (If the costs of the US carriers and their associated aircraft were included in general purpose naval forces, US outlays would be 20 percent more than the estimated dollar costs of Soviet forces in 1980 and 40 percent higher than the Soviet total for the entire period.)

US outlays for tactical air forces (including aircraft carriers and their associated aircraft) fell from 1971 to 1974 but have grown since then. The estimated dollar cost of the Soviet forces with a tactical air mission showed a cyclical, but upward, growth pattern related to the procurement cycle for new aircraft. One cycle peaked in the mid-1970s; the next probably will not peak until the early 1980s. Thus, the costs for this Soviet mission were growing at a slow rate in the late 1970s, and US tactical air costs, which were only 20 percent higher over the whole period, are one-third more at the beginning of the 1980s. (If the US carriers and their associated aircraft were excluded, estimated Soviet dollar costs would be 25 percent higher than US outlays in 1980 and 55 percent higher for the period as a whole.)

**Support Forces.** This mission includes the logistic, training, administrative, base-operating, and other support activities required by the combat forces. While US outlays for this mission fell until 1977, the estimated dollar costs for Soviet support forces grew over the period, largely as a result of the growth of the other major missions. In 1971 the estimated Soviet costs were only two-thirds those of the United States, but they have been approximately equal since the mid-1970s.

#### **Investment Costs by Mission**

Figure 6 shows the distribution of dollar investment (procurement and construction) costs within the strategic and general purpose missions over the 1971-80 period. Slightly less than half of the estimated dollar cost of investment for Soviet strategic forces was for the intercontinental attack forces. Strategic defense accounted for a quarter and peripheral attack for about an eighth. Almost two-thirds of the US investment outlays for strategic forces were for intercontinental attack forces.

Land forces accounted for slightly less than half of the estimated dollar costs for investment in the Soviet general purpose mission. Tactical air forces and naval forces each accounted for about one-fourth. In contrast, the tactical air component accounted for the largest share (about 45 percent) of US general purpose investment. Naval forces accounted for one-third; land forces, a fifth.

#### **Other Aggregate Dollar Comparisons**

If uniformed personnel costs (which are based on US pay rates) are excluded from both sides, the estimated dollar costs of Soviet defense activities exceeded US outlays by 30 percent over the period and by 40 percent in 1980. It should be noted that these personnel costs are not defined the same as those often reported by the Department of Defense. The personnel costs here include only compensation for uniformed military personnel. Compensation for civilians and retirees is excluded from this category. US uniformed personnel costs are about one-fourth of total US outlays (when civilians and retirees are included the share is over 50 percent); Soviet estimated dollar personnel costs are about one-third of the estimated total cost.

Aggregate comparisons including military pensions are not highlighted in this paper because pensions are considered to be the cost of past rather than current defense activities. Nevertheless, we do make detailed estimates of Soviet retirement pay. Our estimate of the dollar cost of Soviet retirement was about \$8 billion for 1980; US outlays for retirement were approximately \$11 billion. The US figure is higher despite the currently smaller US manpower force for two reasons: (1) there are few enlisted men in the Soviet retirement pool, and (2) Soviet officers typically serve longer than their US counterparts before retiring. In fact, because of the demographic history of the Soviet military, there were few military retirees before the 1970s. If we add the dollar cost of retirement to both sides, the estimated total dollar costs of Soviet defense activities would be about one-third more than US outlays over the period and 45 percent more in 1980.

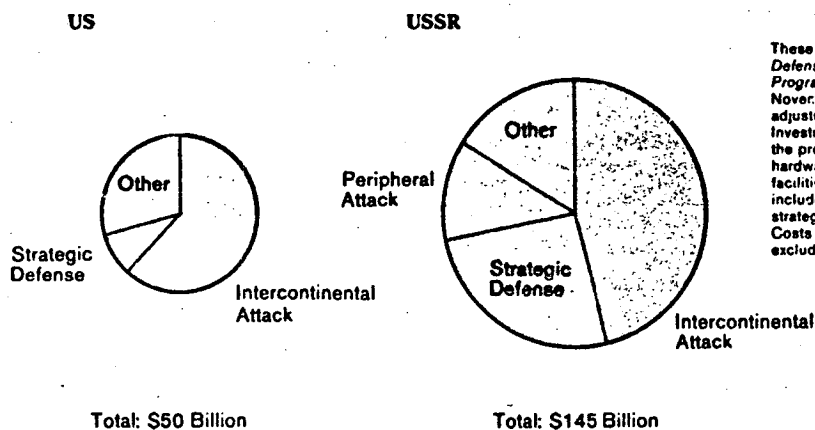
Finally, if RDT&E cost estimates (which are less reliable than those for other activities) are excluded from both sides, the estimated Soviet dollar cost exceeds the US total by 35 percent for the period and by 45 percent in 1980.

**Figure 6**  
**Cumulative Investment for US and Soviet Forces, 1971-80**

A comparison of US investment outlays with estimated dollar costs of comparable Soviet activities

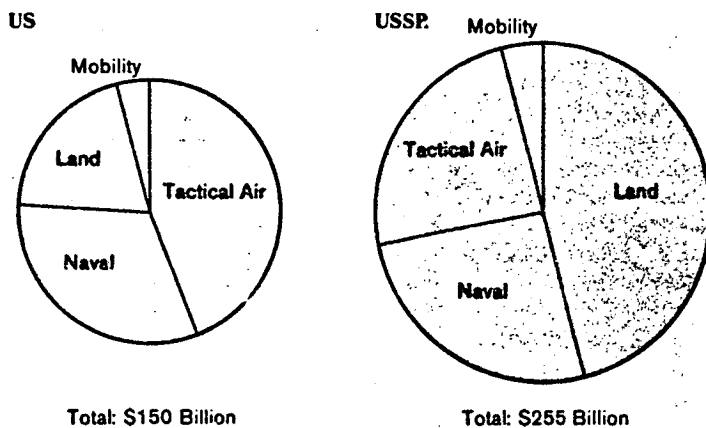
1979 dollars

**Strategic Forces**



These comparisons use US Defense Planning and Programming Categories of November 1980 with minor adjustments to attain comparability. Investment includes all costs for the procurement of military hardware and the construction of facilities. The category "Other" includes nuclear weapons and strategic control and surveillance. Costs for pensions and RDT&E are excluded.

**General Purpose Forces**



The general purpose mission is defined according to the US Defense Planning and Programming Categories of November 1980. Investment includes all costs for the procurement of military hardware and the construction of facilities. Costs for pensions, nuclear materials for warheads, and RDT&E are excluded.

## Other Findings

### Manpower

Our dollar cost comparisons of Soviet and US defense activities reflect large differences in the military manpower levels of the two countries. Over the 1971-80 period, the USSR has maintained a larger standing force than the United States. The uniformed personnel strength of Soviet forces in 1980 was approximately 4.3 million—about twice the US level. The Soviet figure includes the five armed services of the Ministry of Defense and the Border Guards, which are subordinate to the Committee for State Security but have military responsibilities.

We include in this accounting only those Soviet personnel who fill what in the United States are considered to be national security roles. Thus, we do not include military personnel assigned to Military Construction Troops, Railroad Troops, Civil Defense Troops, or militarized security forces of the Ministry of Internal Affairs. (These categories total almost a million men.)

We estimate that Soviet military manpower grew by 400,000 men between 1971 and 1980. The largest increase—250,000 men—occurred in the Ground Forces. In contrast, the level of US military manpower fell in every year of the period except 1980. The US total was 2.8 million men in 1971 and 2.1 million in 1980.

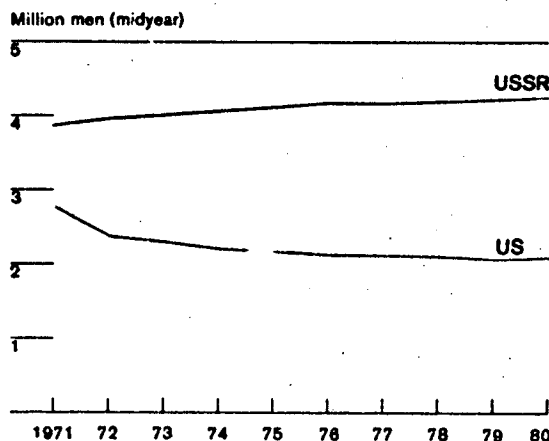
### Forces Opposite China

The USSR structures its forces not only for a major East-West war but also for a possible conflict with China. Over the 1971-80 period, between 10 and 15 percent of the estimated dollar cost of Soviet defense activities (excluding RDT&E) was for units that we believe have a primary mission against China. Of course, some of these forces also could be used to meet other contingencies.

### Comparisons With Previous Estimates

Estimates of the dollar costs of Soviet defense activities for the entire period are revised each year to take into account new information and new assessments of the size, composition, and technical characteristics of the Soviet forces and activities, as well as refinements in

**Figure 7**  
**US and Estimated Soviet Active Military Manpower**



The USSR line excludes Internal Security Troops, Military Construction Troops, Railroad Troops, and Civil Defense Troops—almost 1 million men—who do not fill what in the US would be considered national security roles.

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costing methodologies. The US data used for comparative purposes are similarly revised each year to take into account changes in *The Five-Year Defense Program* and the *Defense Planning and Programming Categories*. In contrast to our practice in previous editions of this paper, however, we have not updated the price base; the base this year, as last, is calendar year 1979 prices.

This year's estimate of the dollar cost of Soviet defense activities for 1979 is about \$4 billion higher than the estimate for that year in last year's paper. Approximately half of the increase results from an improved estimate of construction activities. Although our cost factors remained about the same, we now have a better understanding of the extent of construction work at military facilities built during the period. The rest of the increase results from higher estimates for procurement (primarily aircraft and ships) and O&M (primarily facility maintenance).

## Methodology

### Definitions

The following US activities and their Soviet counterparts are included in the cost comparisons in this report:

- National security programs funded by the Department of Defense.
- Defense-related nuclear programs funded by the Department of Energy.
- Selective Service activities.
- The defense-related activities of the Coast Guard.

The following are excluded from the comparisons:

- Military retirement pay, which reflects the cost of past rather than current military activities.
- Soviet space activities that in the United States would be funded by the National Aeronautics and Space Administration.
- Military assistance (except for the pay and allowance of uniformed personnel) and foreign military sales.
- Civil defense programs.
- Veterans' programs.
- Soviet Internal Security Troops, who perform police functions, and Soviet Railroad and Construction Troops who are not directly involved in national security matters.

### Procedures for Estimating the Dollar Costs

The dollar costs of all Soviet defense activities except RDT&E are developed by identifying and listing Soviet forces and their support apparatuses. Our model contains a description of about 1,100 distinct defense components—for example, surface ships, ground force divisions, and air regiments—and our latest estimates of the order of battle, manning, equipment inventories, and new equipment purchases for those components.

To detailed estimates of physical resources, we apply appropriate US prices and wage rates. This procedure is complex, but in general we do the following:

- For procurement, we estimate what it would cost to build equivalent items in the United States at prevailing dollar prices for materials and labor, using US production technology and practices and assuming the necessary plants and supplies would be avail-

able. Thus, the dollar costs are based on US manufacturing efficiencies.

- For operation and maintenance, we apply dollar prices to estimate the labor, materials, spare parts, overhead, and utilities required to operate and maintain equipment the way the Soviets do.
- For military personnel, we first estimate the military rank of the person in the United States who would be used to perform the functions of each Soviet billet and then apply the appropriate US pay and allowance rates to that job.

The costs of duplicating the Soviet RDT&E effort in the United States are estimated in the aggregate by converting an estimate of their ruble costs into US dollars.

Our estimates of future dollar costs for the 1981-85 period are based on the evidence of current Soviet weapons production and testing and the construction of production and R&D facilities.

US dollar cost data are expressed in outlays derived from *The Five-Year Defense Program* issued by the Department of Defense in September 1980 and the US budget for fiscal year 1981. The US data are converted from fiscal year to calendar year, and defense-related activities of the Department of Energy, the Coast Guard, and the Selective Service are added. The outlays for each year are converted to their equivalent in 1979 dollars using detailed price indexes for each type of military expenditure. Because of these adjustments, the US figures in this report differ from published budget appropriations. US outlays for 1980 are estimated.

### Confidence in the Dollar Estimates

The reliability of the estimates depends on our ability to measure accurately the levels of Soviet defense activities and to determine accurate cost factors to apply to that data base. We believe that the dollar cost estimate for total defense activities is unlikely to be in error by more than 15 percent for each year over the 1971-80 period, but the uncertainty attached to both the level and trend for the mid-1980s is substantially

greater. The margin of error can be more or less than 15 percent for some of the individual items and categories. Our individual estimates, while unbiased, are subject to random errors; some will be too high and some will be too low. We have greater confidence, however, in our aggregate estimates because these errors tend to cancel each other when the data are aggregated. For essentially the same reason, we are generally more confident in data that represent trends rather than absolute levels.

We place our highest confidence in the estimate of personnel costs, which account for about 35 percent of the total estimated dollar cost of Soviet defense activities for the 1971-80 period. We also have substantial confidence in our estimate of total military procurement, which represents about 25 percent of the estimated total dollar costs. Although we are somewhat less confident in our estimates of operation and maintenance costs, we believe we have made substantial improvements in the last few years, particularly for ships, aircraft, and facilities. O&M costs are about 20 percent of the total. Our estimate for Soviet construction costs (about 5 percent of the total) has been revised for this paper, and our confidence in its accuracy is substantially higher than in previous years.

The estimated dollar cost for Soviet RDT&E is derived in the aggregate using a less certain methodology and should be considered as significantly less reliable than the estimated costs for the other categories. On the basis of our considerable research into Soviet RDT&E activities, however, we believe that both the relative magnitude and trend of our dollar cost estimates for RDT&E are generally correct. RDT&E costs are about 15 percent of the total.

#### **Strengths and Weaknesses of Dollar Cost Estimates**

Summary comparisons of US and Soviet defense activities are difficult because they require aggregation of dissimilar elements of each country's military force. A measure is needed that can represent the importance of each element. With such a measure, these disparate elements can be summed and compared. This paper uses the dollar as that measure because it is familiar to US policymakers and because US defense planning is generally done in dollar terms. We also make aggregate comparisons of Soviet and US defense activ-

ities in rubles.\* The results of these calculations show that the estimated ruble cost of Soviet defense activities is about 30 percent more than the estimated ruble cost of US defense activities for each of the last few years (compared to 50 percent when measured in dollars).

Dollar costs can be used to compare the overall magnitudes and trends of the defense activities in two countries in terms of resource inputs. They have an important advantage over many other input measures—such as the number and types of weapons—in that they permit aggregate comparisons. Dollar cost valuations, for example, take into account differences in the technical characteristics of military hardware, the number and mix of weapons procured, manpower strengths, and the operating and training levels of the forces.

Dollar valuations, however, still measure input rather than output and should not be used as a direct measure of the relative effectiveness of US and Soviet forces. Assessments of capability must take into account strategic doctrine and battle scenarios; the tactical proficiency, readiness, and morale of forces; the numbers and effectiveness of weapons; logistic factors; and a host of other considerations. Thus, while dollar valuations can portray changes in the military emphasis of a nation's forces over time, they are not sufficient alone to compare the capabilities of US and Soviet forces.

Dollar costs do not measure actual Soviet defense spending, the impact of defense on the economy, or the Soviet perception of defense activities. These issues are more appropriately analyzed with ruble expenditure estimates.

\* To estimate the ruble cost of US defense activities, we must put a ruble price on each of these activities. Pay and allowances are costed directly by dividing each service into 21 ranks from general to private. The US manpower in each rank is multiplied by ruble rates of pay, travel, clothing, and other allowances. US RDT&E, procurement, construction, and operation and maintenance are calculated using dollar-to-ruble conversion factors. The dollar value of each of the US resource accounts is multiplied by the appropriate conversion factor. These factors themselves are each value weighted, reflecting the importance of different components of that particular account. The conversion factors also take into account those areas where we judge US weapons have a significant technological or qualitative advantage.